

REMARKS/ARGUMENTS

Favorable reconsideration of this application is respectfully requested in view of the amendments made above and the remarks that follow.

Formal drawings are submitted herewith under cover of a separate letter to the Drawing Review Branch.

5 The present invention comprises a device that extinguishes a candle flame and prevents smoking of the candle wick by directing a short burst of non-flammable fluid, e.g., water, against the flame. The fluid is discharged in a quantity sufficient only to extinguish the flame and prevent smoking of the wick, but insufficient to wet a surrounding surface. This is an important feature of the invention, since candles frequently are supported on surfaces, e.g., tables and other
10 fine furniture that would be damaged by simply spraying water or water droplets against the flame. This is perhaps one reason conventional candle snuffers are designed to be placed on the candle flame to smother it, without spraying any water. Most candles, especially in households, are extinguished simply by blowing the flame out. This normally results in substantial smoking of the candle, since the wick continues to burn and produce smoke after the flame is
15 extinguished. The present device functions entirely differently than conventional candle snuffers, in that it relies solely upon a short burst of non-flammable fluid directed against the flame to extinguish the flame and cool the wick to prevent production of smoke. In the embodiment that uses water as the non-flammable fluid, the amount of water discharged is insufficient to wet a surrounding surface, and the pressure of discharge is not so great as to cause
20 spattering of the molten wax. In use, the device of the invention is held in spaced relationship to the candle and candle flame. In the specific examples disclosed, the quantity of water discharged during a dispensing cycle is from about 0.08 ml to about 1.0 ml, the particle size is from about 1.0 micron up to about 1,000 microns (preferably 65 to 70 microns), and the discharge pressure is from about 25 psi to 100 psi. Further, in the elected embodiment the device comprises a finger
25 pump.

Claim 1, *as rejected*, calls for a device for extinguishing a candle flame, comprising a container for holding a quantity of water, and means associated with the container for discharging under pressure during a dispensing cycle *up to about 1.0 ml* of the water as an

aerosolized, fog-like spray of water droplets having a size of from about 1.0 to about 1000 microns distributed over a steep bell curve, and dispersed in a filled conical spray pattern sufficient to encompass the flame of a candle to extinguish the flame *without requiring contact between the device and the candle or the candle flame*. This claim has been amended herein to more clearly define the present invention. The amendments are not believed to introduce any new issues requiring further search and/or consideration.

This claim stands rejected under 35 USC 103(a) as obvious over Harrison modified by Yen and Goeren. It was the examiner's position that Harrison discloses the claimed invention with the exception of the size of water droplets, the spray distribution (i.e., a steep bell curve and a filled conical spray), and the quantity of water discharged in each cycle, but that it would have been obvious to modify Harrison in view of Yen, which teaches a water droplet size in the claimed range, and to further modify Harrison in view of Goeren to sufficiently disperse the mist and produce a filled conical spray so as to not overly wet the surface being treated. The quantity of water discharged in each cycle was said to be a mere matter of design choice. With regard to discharge pressure, water droplet sizes and flow rates, reference is made to columns 5-8 of Yen, where the following statement appears: "optimum parameters of the extinguisher required for extinguishing various types of fires, including water mist characteristics (spray angle, water droplet sizes and flow rates), discharge pressures, nozzle discharge angles, and the type of nozzles, have been determined." This is a very general and vague statement and does not teach any particular values for the parameters. It is presumed that these other, unknown values would be values suitable for extinguishing a fire of the type with which the Yen invention is concerned. The only actual values given by Yen related to these parameters are a discharge pressure in the range of from 170 - 250 psi, although one example is given with the pressure as low as 125 psi. In no example was the quantity of water discharged less than 1 liter.

It is respectfully submitted that it would not be obvious to modify Harrison in view of Yen and/or Goeren to produce the claimed invention.

The Harrison candle snuffer has a fundamentally different structure and mode of operation than the present invention or the inventions disclosed in Yen and Goeren. Harrison relies upon the bell shaped housing 24 to smother and put out the flame, whereas the mist of water discharged is primarily intended to cool the wick to prevent the production of smoke, and to "scrub" or prevent any smoke that is produced from dispersing into the surrounding air. As correctly observed by the examiner, Harrison is silent with respect to the droplet size, quantity of water discharged in each cycle, and discharge pressure. It is not clear that the Harrison device would extinguish the flame and prevent smoking of the wick if the housing 24 is not placed over the flame. Even if the quantity of water discharged is sufficient to extinguish the candle flame without utilizing the snuffer 24, the patent does not teach this approach, and the amount of water discharged in each cycle, the droplet size, and the discharge pressure may be sufficient to wet a surrounding surface and cause damage to it.

Yen (6,510,901) discloses a *fire extinguisher* for extinguishing grease fires in a kitchen, and is directed to a system that purports to solve the problem of contaminating food or food preparation surfaces with the chemicals that are used in conventional fire extinguishers. Yen's system solves this problem by spraying a relatively large quantity (over 1 liter, compared with .08 to 1.0 ml in the present invention) of relatively pure water, in the form of a water mist, against the fire for a relatively prolonged period of time (more than 3 seconds, compared with a short burst – typically much less than one second – in the present invention), at a discharge pressure of 125 to 250 psi (compared with 25 to 100 psi in the present invention). Further, Yen apparently relies upon the production of steam to help smother and extinguish the fire (column 2, line 37, and column 4, line 26). Production of steam likely would occur only in the case of very hot fires, such as are encountered in a hot oil or grease fire in a kitchen. Yen obviously is not concerned with spraying just enough water to extinguish a candle flame without wetting a surrounding surface. The industrial grade system disclosed by Yen clearly would not be any more appropriate for extinguishing a candle flame than would a conventional fire extinguisher. Other than the fact that he discloses a particle size for the water mist of only up to 1000 microns,

Yen does not suggest any of the features of the invention. Even this limited teaching would not likely be relied upon by a person having ordinary skill in the art looking for ways to extinguish a candle flame.

Other than selecting a particle size for the water droplets in the range of 400 to 1000 microns, it is not apparent how Harrison could be modified in view of Yen to produce the claimed invention. In fact, in view of the completely different structures, purposes and modes of operation of Harrison and Yen, it is not apparent that it would be obvious to modify either in view of the other, since any such modification that would produce the claimed invention would also completely alter the principle of operation of the respective Harrison and Yen devices.

Goeren (5,829,648) is concerned with an apparatus to entertain the user and dispense a fragrance, and has nothing to do with extinguishing a flame, much less a candle flame. This patent is therefore even more remote to the present invention than Yen, even though Goeren does use water as the carrier for his fragrance, and relies upon a finger pump to dispense the fragrance. However, none of the other features of the invention are suggested. Goeren emits a "blossom" of spray (column 2, line 16), and states that the spray "is sufficiently dispersed so that the bedding is --- not overly wet by the spray". This at least implies that the spray is wet, and some wetting of the bedding does occur. This would not be satisfactory in the present invention, and it is not apparent how this patent teaches modification of Harrison to produce the results obtained with the claimed invention.

There is no suggestion in either Yen or Goeren for making the proposed modifications, and even if the modifications were made the claimed invention still would not be met. For instance, none of the references of record teaches a device for extinguishing a candle flame, wherein the quantity of water discharged is sufficient to extinguish the flame of a candle but not wet the surrounding surface. The quantity of water discharged in Harrison apparently is intended to eliminate smoking of the wick, and not to extinguish the flame; and the quantity of water discharged in Yen is magnitudes greater than anything that would be required to extinguish a candle flame and clearly would flood any surrounding surface.

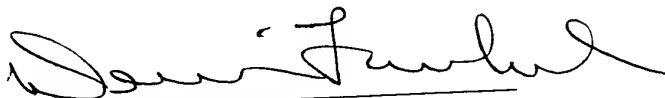
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5 Modification of Harrison to eliminate the snuffer 24 and its intended function, and/or to discharge a quantity of water sufficient to extinguish the candle flame but not wet a surrounding surface, thereby obviating the need for the snuffer 24, would change the principle of operation of Harrison. Moreover, there is no teaching in the prior art of record of *any* type of flame extinguisher that discharges just enough water to extinguish the flame but not wet a surrounding surface.

In summation, none of the cited references, whether considered singly or in combination, teach the present invention or suggest how any of them could be modified in view of the other to produce the present invention as claimed.

10 An early and favorable action on the merits is respectfully requested.

Respectfully submitted,
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